

Remarks/Arguments

This amendment is filed in response to the office action dated March 03, 2004. The Examiner has objected to claim 9. Claim 9 has been amended to correct its dependency to the appropriate independent claim (claim 7).

The Examiner has rejected claims 1, 2, 4-6, and 9 as anticipated by Minne. The applicants respectfully traverse this rejection. The present invention provides for control of multiple probes each mounted on an AFM with independent operation in three axes of motion (see page 6 lines 6-16 of the present application). Minne discloses two probes (dull 130 and sharp 140) connected to a single probe assembly 102 with actuators (136, 146) for the two probes which are solely for vertical or z-axis motion (“[f]irst and second actuators (136 and 146) are mechanisms designed to move dull tip 134 and sharp tip 144 vertically within a range” col. 4 line 66 – col. 5 line 1). Consequently all scanning motion of the probes in the measurement plane relative to the sample 104 is rigidly connected.

The present invention provides for separate control of multiple probes to allow simultaneous independent scanning of the probes without collision. The Examiner has cited Minne for disclosing “means for generating first motion control signal [180], means for determining second motion control signal [180]...” . The present invention as claimed is distinguishable over Minne. Claim 1 requires “means for generating a first motion control signal for a first one of the AFMs for motion *in a first direction*;

means for generating a second motion control signal for the first one of the AFMs for motion *in a second direction*,” (emphasis added). Minne does not disclose or suggest such features. The motion control provided by Minne through controller 180 is limited to z-axis motion of the actuators 136 and 146. Similarly, it is believed that the Examiner’s reference to Minne for “means for determining first and second offset motion control signals response to first and second motion control signals [180]” is directed to the control of the actuators for raising the dull probe and lowering the sharp probe in response to a feature identification as described in col. 6 lines 28-54. Again, the “offset” motion of the probes in Minne is limited to a z-axis actuation. The present invention, however, provides for “means for determining *a first offset motion control signal* responsive to the first motion control signal for a second one of the AFMs for motion in

spaced relation to the first one of the AFMs *in the first direction*; means for determining *a second offset motion control signal* responsive to the second motion control signal for the second one of the AFMs for motion in spaced relation to the first one of the AFMs *in the second direction*;" (emphasis added). This operation is nowhere disclosed or suggested by Minne. The applicants therefore respectfully contend that the Examiner's assertion that Minne discloses the elements of the present invention is in error and the rejection should be withdrawn.

The Examiner has also rejected claims 1, 2, 4, 5, 7 and 10 as anticipated by Choo. This rejection is also traversed. The probe tips 20, 22, 24 and 26 of Choo are connected to a "common support structure such as a scanning arm" (col. 4 line 49). The requirements of the present invention as claimed and cited above cannot, therefore, be physically accomplished by the device disclosed in Choo. The applicants respectfully request that this rejection be withdrawn.

The Examiner has rejected claim 11 as unpatentable over Choo in view of Minne. Claim 11 depends from claim 7 which includes the requirements for attaching a first cantilever supported probe to a first AFM and a second cantilever supported probe to a second AFM with the associated independent motion provided by the two AFMs controlled by determining a first directional pattern for the first probe and a second directional pattern for the first probe and then calculating control signals and first and second offset control signals. No such disclosure is present or suggested in either Choo or Minne as discussed above.

The Examiner has also rejected claim 8 as unpatentable over Choo in view of Altmann. Claim 8 is dependent on claim 7 and, as argued above, Choo does not disclose or suggest the basic elements/steps of the combination comprising the present invention. Altmann similarly does not disclose such elements/steps and, like Choo and Minne, consists of multiple probes rigidly attached to a common support (see for example col. 7 lines 60- col. 8 line 23 which includes "a rigid mechanical coupling between the first local probe and the second local probe"). The Examiner's rejection of claim 8 is therefore respectfully traversed and withdrawal of this rejection is requested.

The applicants gratefully acknowledge the Examiner's identification of allowable subject matter in claim 3 if rewritten in independent form. Based on the argument above,

applicants contend that claim 1 from which claim 3 depends is allowable and the Examiner's objection with respect to claim 3 should be withdrawn.

New claims 12 – 15 have been added for consideration.

The applicants believe that all claims now pending in the application as amended are in condition for allowance and action by the Examiner in that regard is respectfully requested.

Respectfully submitted,



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